

REMARKS

Summary of the Office Action

Claims 1-5, 8, 12, 14-15, 21-22, 24-32, 34, 38-44, 50-51 and 53-55 stand rejected under 35 U.S.C. § 102(b) as being taught by U.S. Patent No. 4,427,059 to Benninghoven, et al.

Claims 6, 7 and 33 stand rejected under 35 U.S.C. § 103(a) as being unpatentable over U.S. Patent No. 4,427,059 to Benninghoven, et al.

Claims 9, 10, 35 and 36 stand rejected under 35 U.S.C. § 103(a) as being unpatentable over U.S. Patent No. 4,427,059 to Benninghoven et al.

Claims 11 and 37 stand rejected under 35 U.S.C. § 103(a) as being unpatentable over U.S. Patent No. 4,427,059 to Benninghoven, et al. in view of U.S. Patent No. 4,988,879 to Zare, et al.

Claim 13 stands rejected under 35 U.S.C. § 103(a) as being unpatentable over U.S. Patent No. 4,427,059 to Benninghoven, et al. in view of Applicants' alleged admission of prior art relating to known surface roughness processes.

Claims 16 and 45 stand rejected under 35 U.S.C. § 103(a) as being unpatentable over U.S. Patent No. 4,427,059 to Benninghoven, et al. in view of U.S. Patent No. 5,326,633 to Clough, et al.

Claims 17-20, 23, 46-49 and 52 stand rejected under 35 U.S.C. § 103(a) as being unpatentable over U.S. Patent No. 4,427,059 to Benninghoven, et al. in view of U.S. Patent Application 2002/0155620 to Hutchens, et al.

Summary of the Response to the Office Action

Claims 1, 5, 6, 20, 26, 27, 38, 40 and 41 have been amended to more particularly point out and distinctly claim the subject matter which the Applicants regard as their invention. Claims 2, 6, 25, 32 and 33 have been cancelled without prejudice or disclaimer. Claims 56-66 have been added. Accordingly, claims 1, 3-24, 26-66 are presently pending.

All Claims Define Allowable Subject Matter

Claims 1-5, 8, 12, 14-15, 21-22, 24-32, 34, 38-44, 50-51 and 53-55 stand rejected under 35 U.S.C. § 102(b) as being taught by U.S. Patent No. 4,427,059 to Benninghoven, et al. To the extent that the Examiner may consider this rejection to apply to independent claims 1, 27, 41, and 56, as amended, the rejection is respectfully traversed as being based upon a reference that neither teaches nor suggests the novel combination of features now recited in independent claims 1, 27, 41, 56 and 60.

Independent claim 1 now recites, amongst other features, contacting an analyte with said non-porous rough surface such that said analyte interacts with said non-porous rough surface; and exposing said non-porous rough surface to a laser to produce a ionized gas phase analyte, wherein said contacting of said analyte with the non-porous rough surface occurs in situ before and after exposing said non-porous rough surface to the laser. New independent claim 56 recites, amongst other features, interacting a gaseous analyte with a surface of a substrate having a non-porous rough surface, producing an ionized gas phase analyte by irradiating the substrate

with a laser; and repeating the step of interacting a gaseous analyte with a surface of a substrate having a non-porous rough surface in situ.. As discussed at lines 7-11 on page 9 of the Applicants' specification, the contacting of an analyte to the non-porous rough surface can occur in situ, that is, at the same location, where the non-porous rough surface is exposed to an energy source. Thus, where the exposure to an energy source is accomplished by means of, for instance, laser pulses, and the gaseous analyte is present in situ, then the gaseous analyte contacts the substrate surface both before and after exposure of the non-porous rough surface to a pulsed energy source.

In contrast to the present invention, Benninghoven, et al. describes a method at column 8, lines 45-68 in which a substrate absorbs a gaseous analyte using one apparatus and then the substrate is moved to another apparatus to form analyte ions. Accordingly, Applicants respectfully assert that Benninghoven, et al. does not show or describe contacting an analyte to the non-porous rough surface at the same location where the non-porous rough surface is exposed to an energy source. Moreover, Applicants respectfully assert that Benninghoven, et al. does not describe the analyte contacting the non-porous rough surface both before and after the non-porous surface has been exposed. Thus, Applicants respectfully assert that Benninghoven, et al. fails to teach or suggest each and every limitation recited in each of amended independent claim 1 and new independent claim 56.

Independent claims 27, 41, 64 and 65 now recite, amongst other features, a substrate having a surface roughness of between about 2 nm and about 100 nm. Applicants respectfully submit that Benninghoven, et al. does not show or describe a substrate having a surface

roughness of between about 2 nm and about 100 nm. In contrast to the present invention, Benninghoven, et al. states at column 6, lines 56-57 a “microroughness.” Applicants respectfully submit that there is no description in Benninghoven, et al. of “nanoroughness” nor a suggestion to use a roughness below a microroughness. Further, Applicants respectfully submit that Benninghoven, et al. fails to state that other types of roughness, such as a nanoroughness, can be used. Accordingly, Applicants respectfully assert that Benninghoven, et al. does not teach or suggest a substrate having a surface roughness of between about 2 nm and about 100 nm. Thus, Applicants respectfully assert that Benninghoven, et al. fails to teach or suggest each and every limitation recited in each of amended independent claims 27 and 41, and new independent claims 64 and 65.

New independent claim 61 recites, amongst other features, substrate having a non-porous rough surface having a surface area difference that varies from approximately 20 to approximately 40%. Applicants respectfully assert that Benninghoven, et al. does not teach or suggest a substrate having a substrate having a non-porous rough surface having a surface area difference that varies from approximately 20 to approximately 40%. Thus, Applicants respectfully assert that Benninghoven, et al. fails to teach or suggest each and every limitation recited in new independent claim 60.

Claims 11 and 37 stand rejected under 35 U.S.C. § 103(a) as being unpatentable over U.S. Patent No. 4,427,059 to Benninghoven, et al. in view of U.S. Patent No. 4,988,879 to Zare. Claim 13 stands rejected under 35 U.S.C. § 103(a) as being unpatentable over U.S. Patent No. 4,427,059 to Benninghoven, et al. in view of Applicant’s admission of prior art. Claims 16 and

45 stand rejected under 35 U.S.C. § 103(a) as being unpatentable over U.S. Patent No. 4,427,059 to Benninghoven, et al. in view of U.S. Patent No. 5,326,633) to Clough, et al. Claims 17-20, 23, 46-49 and 52 stand rejected under 35 U.S.C. § 103(a) as being unpatentable over U.S. Patent No. 4,427,059 to Benninghoven, et al. in view of U.S. Patent Application 2002/0155620 to Hutchens, et al. To the extent that the Examiner may consider this rejection to still apply, Applicants respectfully assert that the 35 U.S.C. § 103(a) rejections based upon Zare, Applicants' alleged admitted prior art, Clough et al., Hutchens, et al. do not cure the deficiencies of Benninghoven, et al. as discussed above with regard to amended independent claims 1, 27, 41, 56, 61, 64 and 65.

For at least the above reasons, Applicants respectfully assert that all of the pending 35 U.S.C. §§ 102(b) and 103(a) rejections are not proper because Benninghoven, et al., either alone or in combination with any one of Zare, Applicants' alleged admitted prior art relating to known surface roughness processes, Clough et al., Hutchens, et al., does not teach or suggest the novel combination of features recited in independent claims 1, 27, 41, 56, 61, 64 and 65. Moreover, dependent claims 3-5, 7-24, 26-31, 34-40, 42-55, 57-60, 62, 63 and 66 are allowable for the same reasons as discussed above and for the additional features that they recite. Accordingly, Applicants respectfully request that all of the pending 35 U.S.C. §§ 102(b) and 103(a) rejections be withdrawn.

CONCLUSION

In view of the foregoing, Applicants respectfully request reconsideration and the timely allowance of the pending claims. Should the Examiner feel that there are any issues outstanding after consideration of the response, the Examiner is invited to contact the Applicants' undersigned representative to expedite prosecution.

If there are any other fees due in connection with the filing of this response, please charge the fees to our Deposit Account No. 50-0310. If a fee is required for an extension of time under 37 C.F.R. 1.136 not accounted for above, such an extension is requested and the fee should also be charged to our Deposit Account.

Respectfully submitted,

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